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ABSTRACT

The purpose of this quarterly newsletter is to provide information, communication, and exchange of ideas between people offering Personalized System of Instruction (PSI) courses. The instructional system, an alternative to the traditional university-college lecture-recitation method of teaching, emphasizes a personalized, self-paced, mastery learning with undergraduate tutors. Past issues of the newsletter, which began publishing in 1971, include sections on PSI courses; available materials; events; symposia; workshops; brief reports; question and answers; and articles. Once a year an updated list of all known PSI courses, available materials, and a bibliography is included in the newsletter. In this issue three authors place PSI in a context relative to the current education scene, relating the system to other innovations and identifying its problems, weaknesses, and strength. Other sections are included among those mentioned in typical issues. The newsletter is free to those who wish to have their name placed on the mainling list. (SJM)

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Issue #8 April, 1973

PERSONALIZED SYSTEM OF INSTRUCTION

NEWSLETTER

PSI

ED 079208

J. G. Sherman
Editor

PSI Newsletter
Psychology Dept.
Georgetown Univ.
Washington, D.C. 20007

R. S. Ruskin
Assoc. Editor

From the editor:

As a "theme" for this issue we asked Dr. George Geis, Dr. Gabriel Ofiesh and Dr. Sam Postlethwait to write the following "editorials". These three men are noted for their contributions to innovative teaching techniques. They were chosen first because their own "thing" is not PSI, and secondly because their contributions are related. Each was asked "to place PSI in some context or perspective relative to the current education scene, how it relates to other innovations, its strong points, its weak points, how it should "fit" in the future, what problems PSI has neglected but should consider, how it could contribute to other developments, etc. My hope would be that the editorials would not be totally critical and damning, but neither am I seeking unqualified praise or totally rave reviews. Please feel as free to point to problems and limitations as to successes and positive attributes."

The three lead articles are the result of that request. The editor is grateful to them for their willingness to contribute to the PSI Newsletter.

J.G.S.

SP 006 016

Dr. George L. Geis
Acting Director
Centre for Learning and Development
McGill University
Montreal, Canada

WHAT'S COOKING?

Once upon a time in a faraway land two cooks, named Dref and Gli, spent many months concocting a most wonderful dish. Each day they would try out the recipe. Using their own judgement and the opinions

Cont. on pg. 2, col. 1.

Dr. Gabriel D. Ofiesh
Professor and Director for the
Center for Educational Technology
The American University
Washington, D.C. 20016

PSI MYTH OR REALITY? - NEITHER

As far as I am concerned, there has probably been no development in higher education which has as significant implications for potentially reforming the higher education process as the PSI movement. The PSI programs which I have observed however, do in many cases fall far short of meeting the ideal parameters of individualized instruction. This statement is not meant as a criticism of an effort which should be lauded as much as it intended to establish the beginning of an innovative process such as PSI, the requirement for further research development and implementation. Unfortunately, much of what goes on under the name of "individual-

Cont. on pg. 2, col. 2.

Dr. S. N. Postlethwait
Biology Dept.
Purdue University
West Lafayette, Indiana 47907

PSI and the Audio Tutorial System

Several years ago I had the pleasure of visiting with Fred Keller and immediately it was clear we had similar goals and concerns about education. I had broken from the traditional lecture-laboratory system in 1961 and was meeting with some hostility from several sources so this encounter was like a ray of sunshine in a storm. Since then I have had the further pleasure of acquaintance with Gil Sherman, Ben Green and others associated with PSI, and I'm convinced that the basic

Cont. on pg. 3, col 1.

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Geis cont. from pg.1

of their guests, they would change it (sometimes ever so slightly) to improve its flavor, its appearance or its nutritional value.

Word of the extraordinary dish began to spread; other cooks sought the secret of the magic blend. So Dref and Gli began to write about and talk to others about the recipe they had developed; they offered cooking lessons and acted as culinary advisors. And soon many kitchens were infused with the wonderful smells of the new dish cooking. But - - - -

"That's a somewhat different odor, isn't it?"

Yes, it was different. For, in one kitchen the chef had run out of thyme and substituted oregano (at least it looked like oregano). In another kitchen the cook, deciding that truffles were too expensive, left them out. One cook "discovered" that four of the ingredients simply did not seem to be needed and so he omitted <u>them</u>. One, worrying that the recipe lack "oomph", added his own spicy touches. Another feared that the hot taste of the dish was too strong and so reduced the amount of pepper and tabasco. Two chefs decided to resolve the problem by leaving the questionable spices out during cooking and then presenting them on little side dishes: each diner could flavor his own plate as he wished.

One dear old cook looked over the recipe closely (his eyesight wasn't too good) and harumphed: "Bah, this is practically what I've been cooking all my life". And so he didn't even bother to change what he prepared that evening; he just changed the name of the dish on the menu.

Dref and Gli began to taste some of the results of "their" recipe. Sometimes they were delighted: even when a new cook had made many changes the dish was lovely. But often, too, the omissions, additions, or changes produced a dish that seemed at odds with itself. Upon finishing a meal the guest might suffer indigestion or feel hungry within an hour.

Just as often some cooks rigidly followed the recipe even though they were cooking in quite different pots, for quite different customers in very different climates. Some even served the meal at breakfast!

(When failure was recognized by one cook, he remarked that the recipe "just doesn't work". Another commented that it might work well for Gli and Dref but not for anyone else.)

The failures concerned Dref and Gli. It was not that they thought their recipe was sacred and inviolate. It was because they felt some of the chefs missed the point. A good recipe is neither a formula to be slavishly followed nor a rough outline to be whimsically altered each time it is used. It is an illustration of important principles of good cooking. Dref said: "By carefully noting <u>what</u> an expert has asked you to do and <u>why</u>, you can learn far more than just how to prepare a single dish".

And the wise old chef B.F. Bourguignon remarked: "The poor cook worships the recipe, the good cook tastes the dish".

Ofiesh cont. from pg.1

ized" or "personalized" instruction is not individualized or personalized in the true meaning of the term. It is rather individual rather than individualized learning. There is a difference. Individual learning is learning that is usually a one to one relationship between student and tutor or between student and machine or between student and program, where the student customarily goes at his own individual rate along a very highly structured linear path. In a truly individualized or personalized instructional situation, the environment for learning is so designed that the environment is adapted to the individual idiosyncrasies of the learner. Of course, the basic hypothesis that still needs to be tested is the question as to whether there are relevant learner characteristics (such as cognitive style, motivational patterns, etc.) which are relevant to the learning experience. To this observer the following parameters identify the dimensions of a truly individualized learning and environment: 1. The identification and use of behaviorally oriented learning objectives. 2. The development and use of criterion reference measures (true & false and multiple choice tests) fall short of being criterion reference measures of performance and behavior. Unfortunately, many of the PSI programs that I have observed rely heavily on such normative reference testing procedures. 3. The analysis of student entry level competencies and student learner characteristics. 4. The use of individualized learning strategies or instructional strategies. 5. The options available to the student for utilizing a variety of validated multimediated software systems. 6. The option available to the student to manage and utilize a variety of the self-instructional off-the-shelf materials that are available and 7. The validation of the instructional strategy. All of these of the above mentioned parameters relate to the full application of the systems approach to the PSI. In the ideal PSI situation, the

instructor may do any of the following: 1. set up the instructional objectives, 2. prepare the criterion test items, 3. make the necessary student diagnostic assessments, 4. create learning options to the fellow student composer of media and mode of instruction, 5. close the loop by constant research and develop activities to improve the learning experiences to the students in the future, 6. serve as the mode of err and catalyst to the process of learning for individual student, 7. serve as the advisor to the student in all of his learning problems, 8. demonstrate competency in the use of all media and instructional modes effectively, 9. possess the knowledge about the learning process and be able to utilize that knowledge in the management of the learning environment, 10. create new and different approaches (learning options to specific learning objectives), 11. devise alternative ways of dealing with individual students and then learning their adjustment problems. The extent to which a personalized PSI system of instruction is individualized can be measured against the above mentioned parameters. But even if these are respected by the instructor, the system is still not a true PSI system. Unless the student has the option of not only going on his own rate which in of itself is criti" cally important, but above all, can negotiate and participate in the process of selecting the stimulus mode for the presentation of materials and the response mode. To further negotiate and select not only the stimulus and response modes for the materials that he is to assimilate. The student will share with the instructor the evaluation of his own progress and ultimately determine his own sequence and instruction which will be based upon the relevance of the instructional content to his own needs.

Postlethwait cont. from pg. 1

philosophies underlying PSI and Audio-Tutorial are so much the same that the apparent differences are rather trivial. The following is a list of some of the important considerations as I see them.

1. A basic assumption for the two systems is that "learning must be done by the learner." Learning is not something done to a learner -- he is a participant in the process. It follows, then, that the student should have freedom to pace himself, select his own study time, use a variety of resources and, to some degree, determine the content. Both systems provide the student with flexibility. Each, permits the student to study on an unscheduled basis and provides tutor assistance if and when desired. The Audio-Tutorial system employs both live tutors and a simulated tutor. The simulated tutor is made available via audio tape in the form of a program of organized learning activities arranged by the senior instructor(s) in the course. Students are free to come and go in a Learning Center which houses these tutors. In this study session the students are encouraged to interact with peers and instructors through a variety of mechanisms including proximity during study, a coffee table, student photographs, etc. General assembly sessions (GAS) and small assembly session (SAS) are scheduled when considered helpful and, commonly, attendance is not required. Content is in minicourse units that can be selected and organized to fit individual needs and interests.

   This idea that student involvement is an important component of a learning system is rather generally accepted by most teachers but many of us, having been conditioned over several years that education is "an information delivery system," cease to question whether the activities we call teaching involve the students at all. Equating "telling them" with "learning" is, and has been, a common practice for many of us.

2. Objectives for each subject matter unit (minicourse) are carefully written and made available to the student for use during his study. The level of achievement required is specified and all students who adequately demonstrate mastery of this minimal level are awarded credit for the unit (minicourse). Both systems use this approach. This simple idea, so cleverly and forcefully called to our attention by Robert Mager, is the foundation for a complete revolution in our educational scene. To specify what we consider to be essential and acceptable as evidence of achievement without constraints on the time and mode of attainment, opens a whole spectrum of flexibility for individual approachs to learning. The freedom to learn by any style, mode or pattern and still receive credit for the knowledge is a "student lib" movement that may have ramifications far beyond the campus scene.

3. Problems of student procrastination inherent in a university setting are common to both systems. Steps to assist the student in self-discipline must be employed and may vary among instructors using either of the systems. These are superficial problems to be dealt with as seems best by the local instructor.

In summary, I don't see the PSI and Audio-Tutorial Systems as incompatable and competitive systems. Quite the contrary -- a clever teacher may profit by a combination of the techniques employed in each system especially if these techniques are adapted to his own style and to the characteristics of the subject matter he is "helping the student learn".

PSI EVENTS (conference, workshops, etc.)

1. A PSI workshop will be held at Georgetown University, June 18 - 29. For more information write: Dr. R.S. Ruskin, Dept. of Psychology, Georgetown Univ., Washington, D.C. 20007.

2. A Summer Institute in Engineering Statics using PSI will be held June 4 - August 3 sponsored by the Alfred P. Sloan Foundation and the College of Engineering, the University of Texas at Austin. Information may be obtained by phoning Dr. Wallace Fowler (512) 471-1356.

3. A two-day conference "Individualized Teaching" will be held June 21 - 22 at the University of California Davis Estension, Davis, Calif. 95616. For application forms and further information write: Lura Middleton, University Extension, University of California, Davis, Calif. 95616 (916) 752-3437.

4. PSI Institute, June 18 - 29, California State University, Long Beach. The number of participants will be limited to 50. The Institute is being funded by a Carnegie Corporation grant through the Chancellor's Office, The California State University and Colleges. Application deadline is May 25th. For information write:

West Coast PSI Institute
California State University
Long Beach, Calif. 90840

MATERIALS AVAILABLE

1. Vernon Williams, Robert Fuller and David Joseph, the University of Nebraska-Lincoln have compiled a very fine six page description of PSI entitled "A Guide to What, How, Why, & Why Not of PSI". Single copies are available for $.25 and 10 or more copies for $.10 each, plus postage. Order from Dr. James G. Buterbaugh, Instructional Media Center, 421 Nebraska Hall, University of Nebraska, Lincoln 68508.

2. "A Bibliography of Operant Instructional Technology in Higher Education", prepared by John H. Hess, Jr. This collection of 265 published, unpublished, and privately circulated papers on the application of operant instructional technology (primarily PSI) to various disciplines in higher education is prefaced by a five page description of PSI implimentation aids; i.e., resources which will make your PSI entry easier. Cost is $1.00, available from:

P.S.I. Psychology Clearinghouse
Eastern Mennonite College
Harrisonburg, Virginia 22801

UNESCO SPONSORS LATIN AMERICAN WORKWHOP

Under the pastel skies of the Brazilian summer, thirty-five science teachers from Latin American universities gathered for a two-week PSI workshop February 5-16 sponsored by UNESCO. They came from eleven countries (many from Brazil, and several from each of Argentina, Chile, Uruguay, and Venezuela) because they wanted to help their universities solve the simultaneous problems of large increases in enrollments, a shortage of qualified teachers, and a shortage of money, while maintaining good and enjoyable education.

The workshop followed the format of the MIT summer Short Courses in which each participant prepares about half of his PSI course materials in addition to learning the philosophy and details of good practice of PSI. In spite of language problems (everything had to be translated into English, Spanish, and Portuguese), the participants and the staff quickly joined forces and worked and played hard together, at times with the help of delicious Brazilian beer and barbecue.

The staff included Carolina Bori and Gil Sherman, both part of the original team who invented PSI, Jorge Angel Diaz of Monterrey, Mexico, Luis Felipe Serpa of Salvador, Brazil, and the workshop director, Ben Green of MIT. Berol Robinson of UNESCO, Paris, orchestrated the show with the help of Roberto da Costa of the Centro Latino Americo de Fisica.

UNESCO hopes to publish a collection of the participants' report on their courses early next year. Until then, one can only speculate on the outcome of the workshop, but the odds look good that most the participants will, in fact, survive their plunge into PSI and will help the method spread in their own countries.

-Ben A. Green, Jr.

REPORT ON AN ENGLISH COURSE

Students are no longer "condemned" to "bonehead" English at American River College, Sacramento, California, because four instructors -- Robert Frew, Richard Guches, Robert Mehaffy, and Helen Mills -- have made sentence writing and paragraph writing integral parts of the sequence leading toward effective composition writing by individualizing instructions and meeting students at their level of accomplishment. They evolved this productive program by writing self-instructional units based on objectives, by permitting students to work at their own pace and to enter and leave their classes at any time during the semester, by changing their roles from lecturer to diagnostician, tutor, and counselor, and by bringing tutors into their workshop sessions. Progress through the courses depends on mastery of a unit before going on to the next. As a result, no one can fail. Evidence of the success of the program is that students, even those who have always hated English, express satisfaction as they develop writing competence, tutors gain invaluable experience in learning subject matter in depth and helping students understand it, and instructors believe that they are helping students more effectively than they could in conventional classes.

Sentence writing text: COMMANDING COMMUNICATION by Helen Mills
Paragraph writing text: WRITER'S WORKSHOP by Robert Frew, Richard Guches, Robert Mehaffy

-Helen Mills-
American River College
4700 College Oak Drive
Sacramento, California 95841

PSI COURSES BEING OFFERED

1. William L. Faissler and Dave Bowen, Physics Dept. Northeastern Univ., Boston, Mass. 02115 are in the middle of a 1 year long experimental PSI course in introductory physics for engineering students. They write that so far the experiment has been relatively successful, but as they are only about 3 weeks ahead of their best students and still have to write the last half of the course there is no time to make any reports of their results.

2. Joseph Miller, Psychology Dept. Temple Buell College, Denver, Colorado 80220 is offering a PSI introductory psychology course and preparing a PSI course in child psychology.

3. Miss Fern Gough, School of Nursing, Pacific Luthern University, Tacoma, Wash. 98447 reports that their sophomore nursing courses are being presented by the PSI method.

4. Stephen V. Filseth, Director of the Interdisciplinary Science Programme, York Univ. Downsview 463, Ontario, Canada writes that "after much debate we have agreed to offer a PSI course next fall in Fortran IV programming."

5. George Menzer, Psychology Dept. Thomas More College, Covington, Kentucky 41017 is in the process of planning a PSI course in psychology.

6. Neal E. Reid, Physics Dept., University of Manitoba, Winnipeg 19, Manitoba, Canada is one of those involved in a pilot program to introduce PSI into the first year physics course.

7. Barry D. Lichter, Materials Science Program, Vanderbilt University School of Engineering, Nashville, Tenn. 37235 is using PSI in an introductory course in materials science and in junior-level courses in thermodynamics and reaction kinetics in materials, and in physical metallurgy.

8. Ms. Lois M. Borgman is currently teaching a PSI biology course at Mt. Ida Jr. College, Newton Centre, Mass. 02159.

9. Lowell G. Herr, The Catlin Gabel School, 8825 S.W. Barnes Rd. Portland, Oregon, 97225 writes that they plan to introduce a unified science course using PSI.

10. Anthony J. Zygment, Electrical Engineering Dept., Villanova University, Villanova, Pa. 19085 has completed a PSI course in Control System Theory "with great effort and encouraging support from students".

11. Marie Dalton, Division of Business, College of the Mainland, 8001 Palmer Highway, Texas City, Texas 77590 has created a PSI Business Mathematics course, which has been in operation as an experiment for two semesters. The course usually has an enrollment of 75-125 students per semester. Two evaluations of the PSI course are being made by the students each semester. "We have been encouraged by these evaluations and student comments, although there have been problems".

12. James B. Conklin, Jr. Dept. of Physics and Astronomy, Univ. of Florida, Gainesville, Fla. 32601, is teaching a PSI version of an introductory mechanics course (roughly the material in the first three chapters of Symon, Mechanics, with supplements from notes and French, Vibrations and Waves). Notes are by now reasonably complete, though still being revised. Dr. Conklin is willing to share his materials with those interested.

13. Clive D. Jorgensen, Zoology Dept., Brigham Young Univ., Provo, Utah 84601 is planning to offer a graduate Population Ecology course next year using PSI.

14. Daryl Siedentop, School of Health, Physical Education and Recreation, Ohio State University, Columbus, Ohio 43210 reports having used PSI in several courses and would be happy to share the materials developed.

15. Robert G. Fuller, Physics Dept. University of Nebraska - Lincoln, Lincoln, Nebraska 68508 has sent the following list of PSI courses now being taught at the University of Nebraska.

Physics 101-102 (8 semester credit hours, without lab) - Elementary General Physics
Prereq-high school algebra and trigonometry

About 40 study units and 160 mastery tests keyed to the textbook - Physics for Biology and Pre-Medical Students, Burns and MacDonald, (Addison-Wesley, 1971). Dr. Robert G. Fuller

Physics 211-212 (8 semester credit hours) - General Physics
Prereq-calculus

About 41 study units and about 130 mastery tests keyed to the textbook - Fundamentals of Physics, Halliday and Resnick, (Wiley 1970).
Dr. David Joseph

Anthropology 11 - General Anthropology (3 semester credit hours)

About 13 study units and 39 mastery tests and 13 proctor Study Guides - keyed to the textbooks - Human Evolution, J. Birdsell, (Rand McNally 1972), and Man in Prehistory, C. Chard, (McGraw-Hill 1969).
Dr. Martin Q. Peterson and Mr. Peter Bleed

Anthropology 11 - General Anthropology (3 semester credit hours)

About 10 study units, 30 mastery tests, and 10 proctor Study Guides - keyed to the textbook - Human Evolution, J. Birdsell, (Rand McNally 1972) Dr. Martin Q. Peterson

University Studies 295 - Introduction to Social Biology (3 semester credit hours)

Nine study units for Essays in Social Biology, B. Wallace, Vol. 1,2, and 3, (Holt, Rinehart, Winston 1971). Dr. Martin Q. Peterson

Economics 211 - Principles of Economics (3 semester credit hours)
Prereq-Sophomore standing

About 22 Study units and 60 mastery tests keyed to the textbook Economics (5th edition). C. R. McConnell (McGraw-Hill 1972)
Dr. Jerry L. Petr

16. Walter Becker, Washington State Univ., Pullman, Washington 99163 reports on Genetics 301, General Genetics, which is a junior level course and is taught by the audio-tutorial method of learning with fifteen basic and seven optional minicourses. Also the minicourse tests are computer generated from a question bank and must be passed at the 80% level of mastery. This semester they are using four student tutors (proctors) and comparing the performance of their students with those students who take discussion sections. The enrollment in the class varies from 187 to 238 each semester.

INFORMATION WANTED

1. Robert C. Skene, Applied Sciences Division, Conestoga College of Applied Arts and Technology, Kitchener, Ontario, Canada writes that they are developing a learning systems approach for their course Human Anatomy and Physiology which they teach to about 450 diploma nursing students. They have succeeded in writing behavioral objectives for the course and have begun to establish an audio visual self-learning center. They feel a lack of communication with others involved in the same endeavour, and would welcome hearing from others.

2. William S. Alling, Dean of Students, Riverdale Country School, 253rd St. & Fieldston Rd., Bronx, N.Y. 10471 is interested in attempting to apply PSI at lower grade levels, perhaps junior-high. He would like to hear from those who have used PSI successfully or unsuccessfully at pre-college levels.

3. Emperatriz N. Rabage, Dept. of Nursing, California State University , Fresno, Calif. 93710 plans to develop a PSI course on Teaching Strategies and will appreciate any information on PSI programs in this or related courses.

4. Don Daloise, Head, Science Dept., Mount Baker Secondary School, 1410 Baker St. Cranbrook, B.C. is attempting to design an introductory Astronomy course suitable for the Senior Secondary level. He would like to request assistance from any readers who may have experience with such a course - PSI or otherwise.

5. Peter Gence, Dept. of Philosophy, Eastern College, St. Davids, Pa. 19087, is interested in obtaining any information on PSI programs being used in freshman introductory philosophy and logic at the university level.

6. Al Varone, Physical Sciences, Oakland Community College, Orchard Ridge Campus, 27055 Orchard Lake Rd., Farmington, Mich. 48024 writes that at the Orchard Ridge campus they teach Liberal Arts and Engineering physics (the later using calculus). He is particularly interested in knowing if PSI can be used to teach physics with calculus.

7. Sam Standring, 147 Rose Dr., Fullerton, Calif. 92633, is a high school chemistry and physics teacher using individualized instruction in those courses. He writes that his biggest problem is having supplies for so many experiments available at the same time. If you know how this can be solved he would like to hear.

8. Clark Maye, Dept. of English, California State College, San Bernardino, Calif. 92407, is developing an independent study, credit by examination project in literature (a freshman-sophomore genre-oriented course). He would greatly appreciate any information from people who have used PSI techniques with any types of literature.

9. John O. Wernrgreen, General Studies Science Program, Central University College, Eastern Kentucky University, Richmond, Kentucky 40475 is developing a PSI course in physical science (for liberal art majors) and would appreciate any information on the experiences of others in this area.

10. P.H. Northcott, Tasmanian College of Advanced Education, G.P.O. Box 1415P, Hobart, Tasmania, 7001 writes that they are experimenting with PSI courses for 2nd and 3rd year students in geography. The engineering and applied science staff are also interested in adopting PSI. Assistance and materials in these areas would be gratefully received.

INFORMATION WANTED (cont.)

11. Herbert Rosing, Physical Science Dept., The Loop College, 64 East Lake St., Chicago, Ill. 60601 writes that he is curious as to whether there is any feedback on test security and how it has been handled by those teaching PSI courses. For example, how does one minimize or counteract the possibility of test information being passed on from students working at a faster pace to those working at a slower pace? It seems to me that even two or three forms of the same test might not be enough, he concludes.

12. Robert S. Hall, Science Education Center, Physics Bld., University of Iowa, Iowa City, Iowa 52240 writes: "An examination of the many papers on PSI courses reveals very little research and much speculation. Since I am currently engaged in classrooms research involving Keller style courses, I am wondering whether someone can supply me with any kind of an up-to-date bibliography on PSI courses where there is evidence of the employment of "good" research methods."

13. William J. Clemens, St. Francis Xavier University, Sydney, Nova Scotia, Canada, writes that he was wondering if there are any materials which provide useful suggestions for those considering initiation of a PSI approach for introductory psychology. "We are considering such a move (at present to the point of planning the units), although some structural peculiarities of this institution may make adoption of the entire system impossible. I would be grateful for any such materials or suggestions."

14. Dr. R.H. McDougall, North East London Polytechnic, Holbrook Center, Holbrook Rd. London, England reports that they are investigating the possibility of introducing PSI courses in the Polytechnic and asks for information about the planning, organization, and evaluation of such courses.

15. Dr. Faustine F. Beltran, Lomas de Zamora 481, Wilde (F.C. Roca), Pcia. de Buenos Aires, Argentina is the Director of the Science Dept. in the National Superior Institute of Technical Professors and Professor of Chemistry in the University of Buenos Aires. Dr. Beltran writes of an interest in PSI and says "I would be willing to employ it in one of my Cathedras" and would be interested in receiving more information.

16. Gerald S. Giauque is a Professor of French and Spanish at the University of Missouri-Rolla, Rolla, Missouri, 65401. He would like to see material in which PSI is applied to first and second year foreign language classes.

17. Victor Cook, Physics Dept. University of Washington, Seattle, Washington 98105 is planning to introduce a PSI freshman physics course for non-science majors next winter. He expects to have between 125 and 175 students. In particular, he wonders if anyone can shed any light on the logistics problems associated with laboratory work since most of the student work will take place in the laboratory.

18. Dr. Larry L. Morgenstern, Dept. of Obstetrics and Gynecology, University of New Mexico School of Medicine, 2211 Lomas Blvd. N.E., Albuquerque, New Mexico 87106 is the educational coordinator for the third and fourth year medical school classes in Obstetrics and Gynecology at the University of New Mexico School Of Medicine. He is interested in adapting PSI for the needs of their dept. and would welcome information from those who have used PSI in this area.

INFORMATION WANTED (cont.)

19. Arline R. Standley, Chairman Dept. of English and Linguistics, Indiana University at Fort Wayne, 2101 Coliseum Bld. East, Fort Wayne, Ind. 46805 is interested in obtaining further information about the use of PSI in the Humanities, especially in the field of English Composition.

20. Jeffrey May, Head of Math-Science Dept., The Cambridge School, Weston, Mass. 02193 reports that in September they are beginning an entirely new curriculum in which students will enroll in one major and one minor course per four week time unit. Science and math courses will run 2 units, or 46 days, although students will have the option of taking longer if necessary. The math-science dept. plans to run all of their courses on a PSI style. They would like to receive any suggestions as to the applicability of PSI to short intensive courses and wonder if it has been used in a summer session at the college or secondary school level. They would also like to hear about any suitable materials for high school level.

JOBS AVAILABLE

WANTED: Teachers and/or Students in Optics

-Work with Industry under N.S.F. sponsorship on an innovative Curriculum Development Program

-Assist in evaluation and revision of modular-type text materials on Interference and Diffraction. (Intermediate College level)

-Materials are integrated with a complete system of interferometer and diffraction experiments of unique design, two computer-aided movies, one 16-mm "field trip" film on interferometers used in earthquake research, and three computer-aided exercises.

-We want to know why you like or don't like the materials. We hope you might like to become further involved in our program ($) by rewriting sections and contributing new materials.

-Contact Dr. Barclay Tullis at Optics Technology, Inc. 901 California Ave., Palo Alto, California 94304 (415) 327-6600.

A Report on the Proctorial System of Instruction at N.C. State University

Abstract

I. General Information

During the fall semester of 1971, the Mathematics Department of N.C. State University taught two experimental sections of MA 111, Algebra and Trigonometry , using PSI. Each of these sections was limited to 25 students selected entirely on a voluntary basis. No lectures were given to the experimental sections. The proctors were students selected from the Department of Mathematics and Science Education.

II. Results

The two experimental sections were compared with two control sections which were taught using the traditional lecture method. A common final examination was administered to the experimental and control sections. The experimental sections had a mean of 68 as compared with a mean of 59 for the control sections. The experimental sections performed significantly better on Cooperative Mathematics Tests prepared by ETS of Princetown, N.J. The grades made by students from the experimental sections on mathematics courses subsequent to MA 111 were generally better than those made by students from the control sections.

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Psychology Dept.
Georgetown Univ.
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